UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

MEARS TECHNOLOGIES, INC.	**§**	
	§	
	§	
vs.	**§**	**CASE NO. 2:13-CV-376-JRG**
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	§	
FINISAR CORPORATION	**§**	

MEMORANDUM OPINION AND ORDER

Before the Court is the parties' claim construction briefing. Five disputed terms are presented by the parties for construction. This Order addresses the parties' various claim construction disputes. The Order will first briefly address the single patent-in-suit and then turn to the merits of the claim construction issues.

I. BACKGROUND AND THE PATENTS-IN-SUIT

Plaintiff Mears Technologies, Inc. ("Mears") brings this action against Defendant Finisar Corporation ("Finisar") alleging infringement of U.S. Pat. No. 6,141,361 (the "'361 Patent"). The '361 Patent generally relates to a tunable optical wavelength selective filter. The Abstract explains:

> A tunable optical wavelength selective filter is constituted by a dynamic holographic diffraction element (3) in combination with a fixed diffraction grating or hologram (2). The dynamic diffraction element (3) is preferably implemented as an electronically controlled image displayed on a pixelated spatial light modulator and in particular a spatial light modulating using photo-electronic integrated circuits fabricated using silicon VLSI technology and integrated with ferro-electric liquid crystals. Amongst other uses the filter can be implemented to form a digitally tunable laser.

'361 Abstract. The arrangement of the dynamic optical element 3 and the fixed element 2 is illustrated in a variety of embodiments such as shown in Figures 1, 2a, 2b, 3, and 6. The optical

filter may be tuned to select a particular wavelength or wavelengths with the dynamic optical element. '361 1:57-61. The tunable filter is stated to have a wide range of applications, including for analysis of light sources, generation of a tunable laser source, implementation of a tunable wavelength source, and the implementation of a tunable wavelength switch or receiver. '361 6:47-59.

The five disputed terms are all found within claim 1:

> 1. A tunable filter for polychromatic optical radiation comprising an electronically programmable spatial light modulator for displaying computer generated hologram patterns of data as a series combination of a first dynamically variable wavelength dispersive element, and a second static wavelength dispersive element.

'361 8:59-64.

II. LEGAL PRINCIPLES

A. Claim Construction Principles

"A claim in a patent provides the metes and bounds of the right which the patent confers on the patentee to exclude others from making, using or selling the protected invention." *Burke, Inc. v. Bruno Indep. Living Aids, Inc.*, 183 F.3d 1334, 1340 (Fed. Cir. 1999). Claim construction is an issue of law for the court to decide. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970-71 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996).

To ascertain the meaning of claims, the court looks to three primary sources: the claims, the specification, and the prosecution history. *Markman*, 52 F.3d at 979. The specification must contain a written description of the invention that enables one of ordinary skill in the art to make and use the invention. *Id.* A patent's claims must be read in view of the specification, of which they are a part. *Id*. For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. *Id*. "One

purpose for examining the specification is to determine if the patentee has limited the scope of the claims." *Watts v. XL Sys., Inc.*, 232 F.3d 877, 882 (Fed. Cir. 2000).

Nonetheless, it is the function of the claims, not the specification, to set forth the limits of the patentee's invention. Otherwise, there would be no need for claims. *SRI Int'l v. Matsushita Elec. Corp*., 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc). The patentee is free to be his own lexicographer, but any special definition given to a word must be clearly set forth in the specification. *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388 (Fed. Cir. 1992). Although the specification may indicate that certain embodiments are preferred, particular embodiments appearing in the specification will not be read into the claims when the claim language is broader than the embodiments. *Electro Med. Sys., S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 1054 (Fed. Cir. 1994).

This court's claim construction decision must be informed by the Federal Circuit's decision in *Phillips v. AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). In *Phillips*, the court set forth several guideposts that courts should follow when construing claims. In particular, the court reiterated that "the claims of a patent define the invention to which the patentee is entitled the right to exclude." 415 F.3d at 1312 (emphasis added) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To that end, the words used in a claim are generally given their ordinary and customary meaning. *Id*. The ordinary and customary meaning of a claim term "is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id*. at 1313. This principle of patent law flows naturally from the recognition that inventors are usually persons who are skilled in the field of the invention and that patents are addressed to and intended to be read by others skilled

in the particular art. *Id*.

Despite the importance of claim terms, *Phillips* made clear that "the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id*. Although the claims themselves may provide guidance as to the meaning of particular terms, those terms are part of "a fully integrated written instrument." *Id*. at 1315 (quoting *Markman*, 52 F.3d at 978). Thus, the *Phillips* court emphasized the specification as being the primary basis for construing the claims. *Id*. at 1314-17. As the Supreme Court stated long ago, "in case of doubt or ambiguity it is proper in all cases to refer back to the descriptive portions of the specification to aid in solving the doubt or in ascertaining the true intent and meaning of the language employed in the claims." *Bates v. Coe*, 98 U.S. 31, 38 (1878). In addressing the role of the specification, the *Phillips* court quoted with approval its earlier observations from *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998):

> Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.

Phillips, 415 F.3d at 1316. Consequently, *Phillips* emphasized the important role the specification plays in the claim construction process.

The prosecution history also continues to play an important role in claim interpretation. Like the specification, the prosecution history helps to demonstrate how the inventor and the Patent and Trademark Office ("PTO") understood the patent. *Id.* at 1317. Because the file history, however, "represents an ongoing negotiation between the PTO and the applicant," it may

lack the clarity of the specification and thus be less useful in claim construction proceedings. *Id*. Nevertheless, the prosecution history is intrinsic evidence that is relevant to the determination of how the inventor understood the invention and whether the inventor limited the invention during prosecution by narrowing the scope of the claims. *Id.*

Phillips rejected any claim construction approach that sacrificed the intrinsic record in favor of extrinsic evidence, such as dictionary definitions or expert testimony. The *en banc* court condemned the suggestion made by *Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002), that a court should discern the ordinary meaning of the claim terms (through dictionaries or otherwise) before resorting to the specification for certain limited purposes. *Phillips*, 415 F.3d at 1319-24. The approach suggested by *Texas Digital*—the assignment of a limited role to the specification—was rejected as inconsistent with decisions holding the specification to be the best guide to the meaning of a disputed term. *Id*. at 1320-21. According to *Phillips*, reliance on dictionary definitions at the expense of the specification had the effect of "focus[ing] the inquiry on the abstract meaning of words rather than on the meaning of claim terms within the context of the patent." *Id*. at 1321. *Phillips* emphasized that the patent system is based on the proposition that the claims cover only the invented subject matter. *Id.* What is described in the claims flows from the statutory requirement imposed on the patentee to describe and particularly claim what he or she has invented. *Id*. The definitions found in dictionaries, however, often flow from the editors' objective of assembling all of the possible definitions for a word. *Id*. at 1321-22.

Phillips does not preclude all uses of dictionaries in claim construction proceedings. Instead, the court assigned dictionaries a role subordinate to the intrinsic record. In doing so, the court emphasized that claim construction issues are not resolved by any magic formula. The

court did not impose any particular sequence of steps for a court to follow when it considers disputed claim language. *Id*. at 1323-25. Rather, *Phillips* held that a court must attach the appropriate weight to the intrinsic sources offered in support of a proposed claim construction, bearing in mind the general rule that the claims measure the scope of the patent grant.

III. CONSTRUCTION OF TERMS

A. Agreed Terms

The parties have agreed to the construction of the terms listed below.

Claim Term	Agreed Definition
The claim preamble: "A tunable filter for polychromatic optical radiation"	The parties agree that the preamble is a claim limitation. Dkt. 52 at 23, n. 13, Dkt. 59 at 9.
"sub-hologram" (claim 10)	"parts of a hologram each illuminated by light from a unique input source" Dkt. 61 at 5.

In view of the parties' agreement on the proper construction of these terms, the Court hereby **ADOPTS AND APPROVES** the parties' agreed constructions.

B. Disputed Terms

1. "wavelength dispersive element" (claim 1)

Mears' Proposed Construction	Finisar's Proposed Construction
A device that separates waves of different frequencies to different output positions.	A device that separates a light beam having mixed wavelengths into its constituent spectral components based on wavelength.

There are two primary disputes between the parties. First, Finisar objects that Mears' use of "output" implies that each dispersive element has to provide light to the system output and Finisar thus asserts that Mears' construction is overly narrow. Second, Mears objects that Finisar's construction mandates that the light beam received on the element must be of mixed wavelengths and Mears asserts the received light may include single wavelengths.

Positions of the Parties

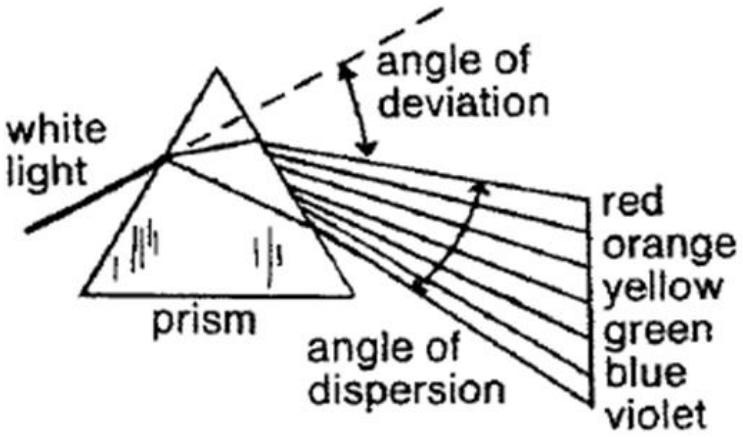
Mears asserts that its construction is consistent with the specification. Mears points to Figure 1 and the corresponding language: "using a coarse dynamic hologram 3 to tune onto a highly wave-length dispersive hologram 2" which generates different wavelengths "tuned to their current output plane positions." '361 3:44-61. Mears also cites a technical journal article as stating "any wavelength dispersive device, separates waves of different frequencies to different output positions." Dkt. 49 at 3 (quoting J. Opt. Soc. Am.).

Finisar asserts that Mears' construction does not cover embodiments of the specification.[1] Finisar notes that the parties agree that the main function of the element is separation of light by wavelength. Dkt. 52 at 7. Finisar asserts that the specification makes clear that wavelength dispersion by using a grating was "well understood" to mean "the spectral components of the input source are separated and distributed around an output plane so that selection of the correct spatial region allows any spectral component to be isolated." '361 1:14-18. Finisar cites to the passage which states that the grating or hologram is used to:

> disperse light of different wavelength into its constituent spectral components, or for example, wavelength-multiplexed data streams

'361 1:53-61. Finisar cites to other passages in the specification which also reference separation by wavelengths. Dkt. 52 at 8 (citing '361 3:44-49, 1:24-25, 7:4-5). Finisar cites to the American Heritage Dictionary of Science as defining "dispersion" with reference to "separation" into "different wavelengths." Dkt. 52 at 9, Ex. 8. Finisar asserts this is illustrated with regard to how a prism separates light of multiple wavelengths (white light) into its separate components:

[1] Finisar asserts that a "wavelength dispersive element" is also referred to in the patent as a "hologram" or a "grating" '361 at 3:41-49.



Dkt. 52 at 9 (citing American Heritage Dictionary of Science). Mears also cites to other extrinsic sources as indicating dispersion relates to separating multiple wavelengths into its constituent parts. Dkt. 52 at 9. Finisar asserts that the intrinsic and extrinsic evidence conforms to its construction.

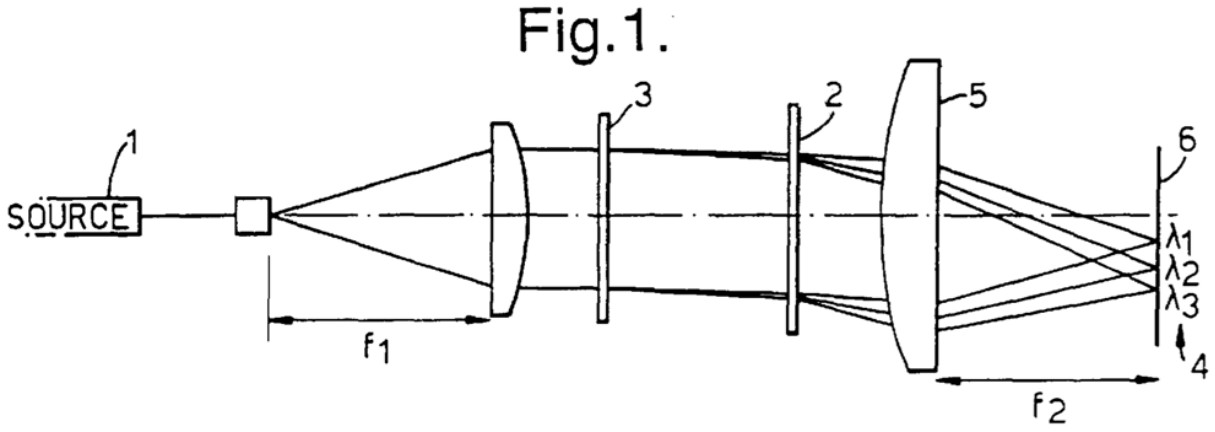
Finisar asserts the Mears' construction adds an additional limitation: that the separation is to "different output positions." Finisar asserts that the issue in dispute is whether the "output positions" limitation sought by Mears' should be imposed. Dkt. 52 at 10. Finisar asserts that the primary source of Mears' position is a 2007 article published more than ten years after the filing of the '361 patent. Finisar asserts this evidence has no relevance due to its timeframe and that its value is dubious at best because it is not a learned treatise, dictionary, etc. Dkt. 52 at 10. Finisar asserts that Mears' citation to '361 3:44-61 misrepresents a reading of the full passage in question. Finisar quotes the passage:

> The principle of operation of the wavelength filter is the angular separation and selection of wavelengths using a coarse dynamic hologram 3 to tune onto a highly wavelength dispersive, fixed hologram 2 (although the sequence of the dynamic hologram 3 and fixed hologram 2 may be reversed). If all the spectral components of the illumination source 1 are parallel and collimated when they enter the filter, each component will leave the two hologram combination in a dynamically

> controllable direction. By altering the dynamic hologram pattern, it is possible to alter which wavelengths λ1, λ2, λ3, ... λn leave at the particular angular directions of interest. The output angular dispersion of these collimated beams can then be converted into a more useful spatial wavelength-separation by means of a lens 5, FIG. 1. Arbitrary spatial filtering of the output plane 6 therefore selects arbitrary wavelength components from the input source. These wavelengths have been tuned to their current output plane positions by the dynamic hologram 3.

'361 3:44-61. Finisar asserts the first sentence of the passage describes the concept broadly without mention of "output positions" and that output positions is only referenced at the very end of the passage. Finisar asserts that the passage is referring to multiple embodiments and that nothing suggests that "different output positions" should be read into the term.

Finisar cites to the figure referenced by the passage in question and notes that two wavelength dispersive elements are shown, dynamic hologram 3 and fixed hologram 2:



'361 Figure 1, 3:44-61. Finisar asserts that only the second wavelength dispersive element, element 2, operates to separate the light onto positions on the output plane (reference number 6). Finisar asserts that the first dispersive element (element 3) operates to disperse the light onto the second dispersive element (element 2). Finisar asserts the figure shows this and the specification

similarly states: "using a coarse dynamic hologram 3 to tune onto a highly wavelength dispersive, fixed hologram 2." '361 3:44-49.

Finisar asserts that Mears' construction would require each dispersive element of claim 1 (first and second) to separate light to "different output positions" and would effectively read out all embodiments of the specification. Finisar also asserts that one embodiment (Figure 6) depicts an embodiment in which neither element (element 2 and element 3) separate light to "different output positions." Dkt. 52 at 14 (citing '361 Figure 6, 7:20-65). Finisar asserts that the Figure 6 embodiment includes a variation in which one of the elements can direct light to only one point in the output plane: "direct a single desired wavelength or multiple wavelengths of light to a fixed point in the output plane." '361 7:63-65.

On reply, Mears asserts that Finisar is correct that the issue presented is whether the separation needs to be to "different output positions." Dkt. 59 at 1. Mears asserts that Figure 1 shows that when light is dispersed into its constituent wavelengths, e.g., wavelengths $\lambda 1$, $\lambda 2$, $\lambda 3$, such wavelengths are in different output positions. Mears asserts that the passage and figure are clear: light enters the filter in one direction (parallel) and leaves the filter in different angled directions that are directed to different output positions on plane 6. Dkt. 59 at 2. Mears asserts that this is consistent with the prism effect shown in Finisar's brief.

Mears asserts that its construction is consistent with element 3 of Figure 1 because as Mears states in its Reply Brief: "output 'positions' (Mears' definition) refers to outputs of the specific wavelength dispersive element (for example, element 3 in figure 1), but is not limited to output "plane" (element 6 of Figure 1)." Dkt. 59 at 3. Thus, Mears asserts that the output positions of element 3 are not limited to the output plane 6 as Mears' asserts Finisar is

characterizing Mears' construction. *Id.* At the Oral Hearing, however, Mears further asserted that each wavelength dispersive element (the first and the second) does not have to be dispersive. For example, Mears stated that in Figure 1, element 2 does not have to be dispersive.

Mears further asserts that Finisar's construction would not encompass element 2 of Figure 1. In particular, Mears' asserts that Finisar's construction improperly requires "a light beam having mixed wavelengths." Mears asserts that the light entering element 2 is multiple single wavelength beams rather than a single beam having mixed wavelengths. Thus, Mears asserts Finisar's construction does not cover element 2. Mears further asserts that Finisar's "mixed wavelengths" would exclude any embodiment wherein the light beam has only a single wavelength. Mears' asserts that its construction of the element would apply independent of whether the light beam was mixed or single wavelengths.

Mears further notes that Finisar's construction only requires separating light into its components. Mears asserts that Finisar's construction does not address how the separation is to occur. Mears asserts its construction makes clear that spatial separation of the wavelengths occurs. Dkt. 59 at 4.

Analysis

Mears is correct that Finisar's use of "mixed wavelengths" for both the first and the second wavelength dispersive elements is improper. As agreed by both parties, the optical element 3 of Figure 1 separates the light into multiple single wavelength light beams. Finisar's construction thus may be interpreted to read out the primary embodiment of the specification in that the light beam at the static wavelength dispersive element (optical element 2) is multiple single wavelength light beams. Such constructions are rarely correct. *See Accent Packaging,*

Inc. v Leggett & Platt, Inc., 707 F.3d 1318, 1326 (Fed. Cir. 2013)("We have held that 'a claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.'"). Thus, a proper construction should avoid language that could be interpreted to read out embodiments and rather should encompass the embodiments of the specification which make clear that even for multiple single wavelength light beams the second dispersive element (for example element 2 of Figures 1, 2a, and 2b,) may provide additional separation to the light beyond the separation provided by the first dispersive element (for example element 3). Thus, Finisar's use of "mixed wavelengths" is improper.

Mears' construction, however, is ripe for confusion with regard to the use of "output." As noted by Finisar, the use of "output" may imply the final filter output such as output plane 6 of Figure 1. In its Reply Brief, Mears explicitly asserted that such an interpretation is not proper as Mears asserted that output "refers to outputs of the specific wavelength dispersive element (for example, element 3 in figure 1)." Dkt. 59 at 3. However notwithstanding Mears' assertion that "output" is the output of each specific element, Mears' arguments at the oral hearing (described below) illustrate the potential confusion because Mears seems to be taking the position that only one of the two optical elements need have an output. As noted by Mears, Mears' proposed construction is meant to make clear that a dispersive element "spatially" separates the wavelengths. Dkt. 59 at 4. Such a concept stated directly avoids the ambiguity created by "output." In addition, a "spatial" separation interpretation of "dispersive" is applicable to both dispersive element 3 and dispersive element 2. In particular, it is noted that the dynamic tunable dispersive element 3 provides a tunable element with spatial separation but with "fine angular steps." '361 4:63-65, Figure 1. The dispersive element 2 provides a static but

"highly dispersive" separation with significant angular dispersion. '='361 3:47, 2:46-49, 7:4-6 Figure 1. Reference in the construction to the "spatial" position it thus more appropriate.

At the oral hearing Mears' raised an issue not presented in Mears' construction. Mears argued that although the claim includes "a first dynamically dispersive element" and "a second static wavelength dispersive element," only one of the two elements need be dispersive. Thus, Mears appears to assert that its construction need only apply to one of the two dispersive elements. In particular, Mears asserted that the optical element 2 of the figures need not be dispersive. Such a position is untenable in light of the clear teachings of the specification. The '361 Patent teaches that both dispersive elements are dispersive, in fact optical element 2 is referenced as the "highly wavelength dispersive" element. '361 3:46-47; *See* '361 7:4-6. As shown in the figures, the predominate angular separation comes from the static optically element 2. Though light wavelengths have been dispersed by optical element 3, optical element 2 also provides additional dispersion by further separating the spatial position of the light. The claim recites two wavelength dispersive elements and the Court's construction provided below applies to both.

The Court construes "wavelength dispersive element" to mean "a device that separates waves of different wavelengths to different spatial positions."

2. "series combination" (claim 1)

Mears' Proposed Construction	Finisar's Proposed Construction
A sequence	Combined in continued succession.

Positions of the Parties

Mears asserts that the patent teaches that the combination of the first wavelength dispersive element and second wavelength dispersive element is a "sequence." Mears cites to "the sequence of the dynamic hologram 3 and the fixed hologram 2 may be reversed." '361 3:47-49. Mears asserts that this sequence is shown in Figure 1. Mears asserts that the sequence of elements through which light passes is reiterated in the patent: "[i]n one architecture the optical beam may be passed through the dynamic hologram, onto the fixed grating, and then back through the same." '361 5:40-42.

Mears asserts that "series" has a common understood meaning of a "sequence" but that Finisar's "continued succession" will require its own definition. Mears asserts that Finisar has not explained how these two terms differ and that Finisar's construction creates potential ambiguity. Mears asserts that Finisar has acknowledged that "definitions of the term 'sequence' may indeed be close to the meaning of 'series' as used in the claims of the '361 patent." Dkt. 59 at 5 (quoting Finisar Br. at 16). Mears objects to Finisar's use of "continued" and Mears asserts that Finisar has provided no insight at to what "continued" adds to the ordinary meaning of "series" or why "continued" is required. Mears asserts that Finisar's extrinsic evidence dictionary definitions relate to the use of "series" in the context of electrical circuitry but provide no justification for varying from the ordinary meaning of "series."

Mears asserts that Finisar's construction would exclude the embodiment of claim 13 in which the elements are "reflective." Mears asserts that the reflective embodiment would not be a continued succession because the two elements would not be a continuous succession. Mears asserts that in such an embodiment as light hits the first element it is reflected back and a third element (a mirror or lens) would be needed to direct the light to the second reflective element. Mears asserts that in this embodiment the first and second elements are not arranged in "continued succession." Dkt. 59 at 6.

Finisar asserts that Mears' construction only provides a partial construction and vitiates the "combination" requirement of the term. Finisar asserts that the term "series combination" first appeared in a 1999 Amendment in which the Applicants indicated that the term was supported by the disclosure of the "static and fixed wavelength dispersive elements in series" as described at 1:46-64 and shown in Figures 2, 2a and 2b. Dkt. 52 Ex. 12 at 3 (October. 22 1999 Amendment). Finisar asserts that the patent describes the dynamic element "in combination with" the fixed element ('361 1:46-49) and "placement of a combination of a fixed (holographic) grating and a dynamic holographic grating in the path of a collimated light beam" ('361 6:67-7:3). Finisar also asserts that dictionaries define the word "series" in the context of continued succession. Dkt. 52 at 15.

Finisar notes that the patent describes the two elements as "the two hologram combination." '361 3:51-52. Finisar asserts that one definition of "sequence" is "order" and that Mears' use of the word "sequence" relates more to the "order" of the elements. In particular, Finisar asserts that the specification passage cited by Mears ("the sequence…may be reversed" ('361 3:47-49)) relates more to the order rather than a series combination. Finisar notes that the American Heritage Dictionary includes definitions of "sequence" that relate to

"following of one thing after another in succession" and "continuous series." Dkt 52 at 16. Finisar asserts that these uses of "sequences" are in agreement with Finisar's construction. Finisar asserts that the term "sequence" thus carries a variety of meanings that creates an ambiguity, particularly in light of the specification use of "sequence" at '361 3:47-49 which Finisar asserts relates to the order. Dkt. 52 at 16.

At the oral hearing, the crux of the dispute became clear. Finisar asserted that its construction requires the two optical elements to be arranged one after the other with no intervening optics. Mears opposes the importation of any such limitation into the claims.

Analysis

The term "series" is used only twice within the specification and neither use relates to the combination of the wavelength dispersive elements (fixed element 2 and the dynamic element 3). '361 2:10, 5:35. In the amendment adding "series combination," the Applicants pointed to Figures 2a and 2b as showing "static and fixed wavelength dispersive elements in series." Dkt. 52 Ex. 12 at 3 (October 22, 1999 Amendment). The term "combination" is utilized repeatedly to describe the use of the dynamic element and the fixed element together. '361 1:46-48, 1:61-63, 3:50-52, 6:67-7:2. Such uses are described in the context of both elements being used to achieve the desired result. The "combination" allows both elements to be used in the light beam path: "a combination of a fixed (holographic) grating and a dynamic holographic grating in the path of a collimated light beam." '361 6:67-7:2. The figures clearly illustrate the optical elements 2 and 3 being used together in the light beam to achieve the desired result. '361 Figures 1, 2a, 2b, 3, and 6. A particular order is not however required. '361 3:47-49 ("the sequence of the dynamic hologram 3 and the fixed hologram 2 may be reversed."). In fact, "the combination [of the

dynamic and fixed elements] … may also be arranged arbitrarily to recombine various of the wavelengths in the output plane." '361 1:61-64.

Both parties correctly identify weaknesses in the opposing parties' construction. In particular, both parties assert that the opposing party's construction lacks something that the claim language itself imparts. Mears' use of "sequence" may carry some interpretations that lack the "combination" concept that is in the claim term and disclosed in the specification. In addition, "sequence" may include a concept of an order. "Series," however, does not mandate a particular order. Rather, the specification makes clear that a particular order is not required. Finisar's use of "continued succession" is also flawed in that the meaning of "continued succession" is less clear than the meaning of the "series combination" term itself. At the oral hearing, Finisar asserted that its construction was meant to require that the two optical elements be arranged with no intervening optics. That "continued succession" does not mandate such requirement highlights the term's ambiguity.

Ultimately, the real issue requiring construction is whether no intervening optics are allowed in the series. This issue is not squarely included in either parties' construction. Finisar has only pointed to embodiments in the specification in which intervening optical elements are not provided in the series. However, the disclosure of a single embodiment or preferred embodiment does not mandate reading said embodiment into the claims. *See Arlington Industries, Inc. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1254 (Fed. Cir. 2011)("even where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction."); *See MBO Laboratories, Inc. v. Becton, Dickinson & Co.*, 474 F.3d 1323, 1333 (Fed. Cir. 2007) (noting that "patent coverage is not necessarily limited to

inventions that look like the ones in the figures"). The specification does not provide language that requires the lack of any other intervening optics. Although the specification primarily describes and shows transmissive optical elements, reflective elements may be used in alternative embodiments. '361 2:50-63, 4:25-32. Such reflective embodiments are described as requiring the use of additional optical elements. *Id.* Thus, Finisar's direct succession interpretation may in fact be contrary to the reflective embodiments. The specification does not mandate the limiting the series to a series in which no intervening optics are present.

In context of the use of "combination" and "series" in the specification and Amendment, the series combination more appropriately is described as the use of the optical elements together. The actual claim language best reflects the usage in the specification and would be understandable to a jury. *See* '361 1:46-48, 1:61-63, 3:50-52, 6:67-7:2. Having rejected Finisar's position regarding requiring the absence of intervening optics, the real issue in dispute, the Court finds that no further construction of the claim term is needed. *See Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1207 (Fed. Cir. 2010)("Unlike *O2 Micro*, where the court failed to resolve the parties' quarrel, the district court rejected Defendants' construction").

The Court finds that "series combination" has its plain and ordinary meaning.

3. "spatial light modulator for displaying computer generated hologram patterns of data as a series combination of a first dynamically variable wavelength dispersive element, and a second static wavelength dispersive element" (claim 1)

Mears' Proposed Construction	Finisar's Proposed Construction
This limitation requires no construction in light of the constructions of computer generated hologram patterns of data, series combination, and wavelength dispersive element.	Spatial light modulator wherein a first dynamically variable wavelength dispersive element and a second static wavelength dispersive element, in a series combination, display computer generated hologram patterns of data.

The primary issue presented is whether the spatial light modulator includes both of the dispersive elements (the dynamic element and the fixed element).

Positions of the Parties

Mears asserts that this phrase includes terms already construed: "computer generated hologram patterns of data," "series combination," and "wavelength dispersive element." Mears asserts that as to the other constituent terms in the phrase, Finisar's construction merely replicates the other constituent terms: "spatial light modulator," "display," and "a first dynamically variable wavelength dispersive element and a second static wavelength dispersive element." Mears asserts that considering the construed and agreed constituent terms, there is little else for the Court to construe. Dkt. 149 at 6.

Finisar asserts that the longer phrase needs construction to clarify ambiguous grammatical phrasing in the claims. Finisar asserts that such ambiguity entered the claim via an amendment:

> 1. (Amended) A tunable [optical wavelength selective] filter for polychromatic optical radiation comprising an electronically programmable spatial light modulator for displaying computer generated hologram patterns of data as a series combination of a first dynamically variable wavelength dispersive element, [in combination with] and a second [fixed] static wavelength dispersive element.

Dkt. 52 Ex. 12 at 1 (October 22, 1999 Amendment)(emphasis in original). Finisar asserts that the claim is not clear on its face as to which parts of the filter are performing the "displaying" function and that the jury would benefit from more precise language regarding the use of the two dispersive elements in the spatial light modulator. Dkt. 51 at 18.

Finisar asserts that its construction clarifies that "the series combination of a first dynamically variable wavelength dispersive element, and a second static wavelength dispersive element" are within the spatial light modulator. Finisar asserts that this is clear from the prosecution history because the Examiner rejected the claim language for failing to set forth the structure of the spatial light modulator and that the Applicants then entered the amendments quoted above with the comment that "the amendment to claim 1 recites a series combination of the two wavelength dispersive elements in the spatial light modulator." Dkt. 52 Ex. 12 at 3 (October 22, 1999 Amendment). Finisar also notes that the specification indicates that the two dispersive elements may be physically combined. Dkt. 52 at 19 (citing '361 2:20-24, 7:9-11). Finisar asserts that its construction helps clarify that it is the two dispersive elements, as a series combination within the spatial light modulator, that perform the "displaying" of the computer generated hologram patterns of data. Finisar asserts this follows from the claim language and also asserts that the specification supports such an interpretation:

> The dynamic diffraction element is preferably implemented as an electronically controlled image displayed on a pixellated spatial light modulator … Such devices are readily controllable, typically via a computer to display one of a series of different holographic diffraction patterns … When the fixed grating has the form of a phase plate it may be an etched glass plate and may by physically combined with the dynamic holographic diffraction.

'361 1:67-2:24.

Finisar asserts that Mears' refusal to attempt to clarify the functional and structural interaction within the claim would undo the effect of the claim amendment. Dkt. 52 at 20. In reply, Mears asserts that the claim is clear as to which parts of the filter perform the "display" function. Mears asserts that the claim terms themselves specify "spatial light modulator for displaying." Mears asserts that there is no need or justification for changing the clear language. Mears asserts that the passages that discuss physically combining the two elements (one etched onto the face of the other) has nothing to do with the display of the patterns of data and creates no ambiguity as to what performs the "displaying" function. Dkt. 59 at 7.

Mears asserts that Finisar's position that the spatial light modulator includes both the "first dynamic" dispersive element and the "second static" dispersive element is contrary to the teachings of the patent. Mears asserts that the specification makes clear that the spatial light modulator is limited to the "dynamic" element: "the dynamic diffraction element is preferably implemented as an electronically controlled image displayed on a pixelated spatial light modulator" ('361 1:67-2:3), "the dynamic hologram 3 would probably be implemented as an electronically controlled image displayed on an amplitude- or phase-mode SLM" ('361 4:7-9) and "using a transmissive SLM as the dynamic hologram" ('361 5:25-26). Finisar also notes that claim 14 adds that the dynamic element "comprises a back plane ferro-electric liquid crystal spatial light modulating device."

Analysis

Though Mears is correct that the sub-terms of the longer phrase in question have been either construed or agreed not to need construction, an issue is still presented to the Court as to what is the impact of the arrangement of the sub-terms. The Court first starts with the claim

language itself. As recited, a structure ("spatial light modulator") is described "as a series combination of a first dynamically variable wavelength dispersive element, and a second static wavelength dispersive element." On its face, the most natural reading of such language includes the two dispersive elements within the spatial light modulator. Any potential ambiguity raised by the placement of the intervening functional language ("for displaying computer generated hologram patterns of data") after the "spatial light modulator" term is clearly resolved by the amendment that added the claim language in question. The claim language before the amendment recited:

> 1. A tunable optical wavelength selective filter comprising an electronically programmable spatial light modulator for displaying computer generated hologram patterns of data as a first wavelength dispersive element, in combination with a second fixed wavelength dispersive element.

Dkt. 52 Ex. 12 at 1-3. Thus as originally claimed, a spatial light modulator "as a first wavelength dispersive element" was combined with the "second fixed wavelength dispersive element." In response to the Examiner's definiteness rejection under §112, second paragraph, the claim was amended as such:

> 1. (Amended) A tunable [optical wavelength selective] filter <u>for polychromatic optical radiation</u> comprising an electronically programmable spatial light modulator for displaying computer generated hologram patterns of data as <u>a series combination of</u> a first <u>dynamically variable</u> wavelength dispersive element, [in combination with] <u>and</u> a second [fixed] <u>static</u> wavelength dispersive element.

Id. at 1. In this regard the claim language was changed such that the spatial light modulator was formed "as a series combination" of the two optical elements. Any potential ambiguity was removed by the Applicants' explicit statement as to the amendment:

> The amendment to claim 1 recites a series combination of the two wavelength dispersive elements in the spatial light modulator. The first of the wavelength dispersive elements is dynamically variable, and the second is static.

Id. at 1-3.

Mears asserts that the specification limits the spatial light modulator to just the first dispersive element (the dynamic element 3) and excludes the second dispersive element (the static element 2). Mears cites to portions of the specification that reference the dynamic element as a spatial light modulator. *See e.g.* '361 1:67-2:3, 4:7-9.

A patentee may define his or her own terms, give a claim term a different meaning than the term would otherwise possess, or disclaim or disavow the claim scope. *Phillips*, 415 F.3d at 1316. In these situations, the inventor's lexicography governs. *Id.* Here, the claim language describes the spatial light modulator "as a series combination of a first dynamically variable wavelength dispersive element, and a second static wavelength dispersive element." As stated above, this language, combined with the Applicants' explanation of such language, make clear that both dispersive elements are "in the spatial light modulator."

Finisars' construction adheres more closely to the claim language, and "[t]he construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." *Id.* Viewing said claim language in light of the prosecution history—and specifically the amendment stating that both dispersive elements are "in the spatial light modulator"—the Court is persuaded that the spatial light Modulator cannot be limited to the dynamic disperse element.

While Finisar's construction makes clear that the spatial light modulator includes both dispersive elements, it raises ambiguity regarding the structure that performs the displaying function. The Court's construction below is faithful to the claim language and avoids such ambiguity.

Subject to individual terms construed as indicated herein, the Court construes "spatial light modulator for displaying computer generated hologram patterns of data as a series combination of a first dynamically variable wavelength dispersive element, and a second static wavelength dispersive element" to mean "spatial light modulator for displaying computer generated hologram patterns of data, wherein a series combination of a first dynamically variable wavelength dispersive element and a second static wavelength dispersive element is in the spatial light modulator."

4. "hologram" (claim 1)

Mears' Proposed Construction	Finisar's Proposed Construction
An optical device (e.g. a grating) that produces a specific deviation and dispersion of the incident light, but which may also perform optical fan out and fan in operations, generate multiple output beams by splitting the input beams into two or more such output beams, or deflect in the input beams in one or two dimensions.	Digital binary phase pixelated image.

The primary dispute between the parties is whether "hologram" must be limited to binary phase holograms. The parties also dispute whether "hologram" refers to a structure or an image.

Positions of the Parties

Mears asserts that its construction tracks the specification:

> Such devices are readily controllable via a computer to display one of a series of different holographic diffraction patterns. Typically such holograms are 2-dimensional optical phase and/or amplitude gratings which produce a controllable deviation and dispersion of the incident light but which can also be arranged to control optical fan-out and fan-in operations, to generate multiple output beams by splitting the input beams into two or more such output beams, and to deflect the input beams in two dimensions rather than one.

’361 2:9-18. Mears notes that the specification also describes a grating as an example of a hologram. ’361 3:40-41.

Finisar asserts that its construction matches the express definition of the term in the specification. Finisar asserts that the term has various meanings and could mean different things depending upon the context. Finisar asserts that the express definition used in the patent is: “[t]he holograms are digital binary-phase pixelated images which are generated using an iterative algorithm such as simulated annealing.” ’361 7:59-60. Finisar asserts that the patent further states “[t]he holograms may be designed to optimally direct light of a fixed wavelength to a single spot anywhere in the first order, or to fan out the light to multiple spots.” ’361 7:60-63. Finisar asserts that the specification teaches that a property of the spatial light modulator “used here is that it is only capable of displaying binary holograms.” ’361 5:58-60. Finisar asserts that while multi-level holograms are mentioned in the specification in passing, there is no disclosure that enables use of such holograms. Finisar asserts that the specification makes clear that only “a complete experimental investigation of this particular embodiment has been performed using binary holograms, to verify its correct operation.” ’361 6:27-29.

Finisar asserts that in Mears’ infringement contentions Mears utilized Finisar’s construction: “[t]hese phase images are holograms as defined in the ’361 patent (‘digital binary-phase pixelated images’)”. Dkt. 52 Ex. 19 at MEARS0000134. Finisar asserts that Mears is estopped from arguing now that a different definition should apply. Finisar also asserts that the specification passage cited by Mears begins clearly with “Typically” and only describes one embodiment. Further, Finisar asserts that the functional based construction utilized by Mears would be applicable to digital binary-phase pixelated images. Dkt. 52 at 22-23. In particular, Finisar points to the specification passage:

> The holograms are digital binary-phase pixellated images which are generated using an iterative algorithm such as simulated annealing. The holograms may be designed to optimally direct light of a fixed wavelength to a single spot anywhere in the first order, or to fan out the light to multiple spots. This can be extended so that the hologram can optimally direct a single desired wavelength or multiple wavelengths of light to a fixed point in the output plane.

'361 7:60-65.

Mears replies that it is the party utilizing the express definition, and that Finisar's construction would limit the term to a specific experiment using only one iteration of the invention. According to Mears, such a construction would exclude holograms in the form of amplitude gratings—which are expressly included in the specification—or multilevel phase gratings. Dkt. 59 at 8 (citing '361 2:11-13, 19-20). As to the infringement contentions, Mears asserts that though it has relied upon binary-phase iterations to show infringement of the accused products, this does not mean that the construction of the term "hologram" should be limited as proposed by Finisar. Dkt. 59 at 8-9.

In its sur-reply, Finisar asserts that the infringement contention did not merely rely on binary-phase iterations to show infringement, but defined "holograms" as "digital binary-phase pixelated images."[2]

Analysis

In the briefing and at the oral argument, both parties acknowledged that within the '361 Patent, "hologram" was not used in the ordinary meaning context.[3] Rather, both parties agreed that as used in the '361 Patent the specification provides the express definition of the term. Dkt.

[2] The parties also debate whether the infringement contentions were properly identified as extrinsic evidence that would be relied upon for claim construction. Dkt. 59 at 3, n. 1. Finisar asserts that the infringement contentions did not need to be identified as extrinsic evidence as such contentions are not extrinsic evidence under the local rules of the EDTX. Rather Finisar asserts such contentions are pleadings in the Markman process. Dkt. 63 at 2-4.

[3] An ordinary meaning being related to a three dimensional imaging techniques.

52 at 20; Dkt. 59 at 8. Again, a patentee may define his or her own terms, give a claim term a different meaning than the term would otherwise possess, or disclaim or disavow the claim scope. *Phillips*, 415 F.3d at 1316. Accordingly, the Court's construction of the term "hologram" is not a reflection of the term's meaning in common parlance or a definition of the term's common use by persons skilled in the relevant art. Rather, the Court construes the term "hologram" as the term is defined by the patentees, acting as their own lexicographers.

Finisar asserts that the specification provides a definitional statement as to the use of the term "hologram" at '361 7:58-65. Rather than being a statement of lexicography, the passage in question merely discloses that the type of holograms used in the preferred disclosed embodiments are binary phase holograms. '361 7:58-65. The disclosure of a single embodiment for a preferred embodiment does not mandate reading the embodiment into the claims. *See Arlington Industries, Inc. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1254 (Fed. Cir. 2011)("even where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction."). Moreover, that holograms are not limited to binary phase images is made clear earlier in the specification with reference to other types of holograms, multi-level holograms. '361 6:23-30. This passage makes clear that multi-level holograms could be "used instead." This passage does state that a "complete experimental investigation" of the disclosed embodiments was only performed using binary holograms, but the passage does not limit the disclosed techniques to only binary phase holograms or otherwise state that the term "hologram" is limited to binary phase holograms. *Id.* In addition, the specification also describes the use of multi-level holograms in other passages. '361 4:12-15 ("In addition, multi-level or blazed holograms can be used to maximize the efficiency…."); '361 6:42-43 ("the

majority of the remaining loss could be eliminated by using a blazed or multi-level grating as the fixed hologram."). Finisar's attempt to limit "holograms" to only binary phrase holograms is thus not supported in the specification.

Finisar also asserts that Mears' is estopped from seeking its construction do to Mears' statement in the infringement contentions. The Court does not read Mears' infringement contention statement as rigidly as Finisar does. The statement was "[t]hese phase images are holograms as defined in the '361 patent ('digital binary-phase pixelated images')". The contention is not a clear and unequivocal disclaimer of claim scope and when read in the context of its use (an infringement contention), may be interpreted to merely be an assertion that digital binary phase pixelated images used by Finisar are holograms, not that holograms must be limited to only binary phase pixelated images.[4]

The construction that Mears provides is supported somewhat by the specification at '361 2:9-18. The passage cited by Mears describes a hologram as "typically" being a "grating" and then lists out various functions of the hologram.[5] Further, Finisar acknowledges that the functional description in Mears' construction would encompass binary phase holograms. Dkt. 52 at 22-23. However, this passage alone does not give the term the full scope as used in the '361 Patent. What is common throughout the specification is that "hologram" is described in the context of a grating structure/pattern, a diffraction element or both. '361 Abstract, 1:45-48, 1:53-64, 2:9-18, 2:19-25, 2:26-32, 2:50-53, 3:39-42, 3:52-55, 4:11-15, 4:57-59, 4:65-67; 5:23-29,

[4] Finisar also asserts that only digital binary phase holograms are enabled. That argument is more suited as a validity challenge.

[5] It is noted that even the passage cited by Finisar continues with some commonality of these functions consistent with Mears construction: "[t]he holograms may be designed to optimally direct light of a fixed wavelength to a single spot anywhere in the first order, or to fan out the light to multiple spots. This can be extended so that the hologram can optimally direct a single desired wavelength or multiple wavelengths of light to a fixed point in the output plane." '361 7:60-65.

6:42-43, 6:66-7:3, 7:9-11, 7:25-28. The Court's construction below reflects the full scope of the term.

The Court construes "hologram" to mean "an optical device configured as a grating or a diffraction element."

5. "computer generated hologram patterns of data" (claim 1)

Mears' Proposed Construction	Finisar's Proposed Construction
Holographic diffraction patterns generated by a computer	Two or more digital binary-phase pixelated image patterns generated by a computer.

The real dispute between the parties relates to the meaning of "hologram," the term construed immediately above.

Position of the Parties

Mears asserts that the parties agree that "computer generated" means "generated by a computer." Mears asserts that the specification teaches that for "hologram patterns of data" such computer generated patterns are different "holographic diffraction patterns." '361 2:11. Mears asserts that this is the language used in its construction. Mears asserts that though holograms may include binary phase iterations as describe in the specification, this does not mean that holograms are limited to such techniques. Dkt. 59 at 8-9.

Finisar asserts that Mears is trying to avoid construction of the key disputed term "hologram." Finisar notes that both parties include "patterns" in the constructions and that the only dispute is focused on the word "holograms." Dkt. 52 at 24. Finisar asserts that its construction incorporates the express definition in the specification for "hologram." Finisar asserts that Mears' proposed functional definition of "hologram" does not fit the context of

"hologram patterns of data," so Mears opts to not construe the term and just swap "holographic" in place of "hologram." *Id.* Finisar asserts that there can be no question that digital binary-phase pixelated images produce holographic diffraction. Dkt. 52 at 24 (citing 5:62-66). Finisar asserts its construction gives an explanation of the word "hologram," while Mears' construction swaps "holographic" for "hologram."

Analysis

As acknowledged by the parties, the only real dispute regarding this term is the meaning of term "hologram." "Hologram" is construed as discussed immediately above. Given a construction of the term "hologram," the remaining words "computer generated" and "patterns of data" do not present a dispute requiring construction for the jury. *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997)("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in determination of infringement. It is not an obligatory exercise in redundancy."). Thus, no further construction of the term "computer generated hologram patterns of data" is necessary.

IV. CONCLUSION

The Court adopts the above constructions. The parties are ordered that they may not refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

So ORDERED and SIGNED this 17th day of June, 2014.

RODNEY GILSTRAP
UNITED STATES DISTRICT JUDGE